B.7.6 Residues Resulting from Supervised Trials (Annex IIA 6.3; Annex IIIA 8.3)

B.7.6.1 Residues in Target Crops

B.7.6.1.2 Green Onion

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Guidelines:	EPA OCSPP Harmonized Test Guideline 860.1500 Crop Field Trials (August 1996) PMRA Regulatory Directive DIR98-02 – Residue Chemistry Guidelines, Section 9 - Crop Field Trials PMRA Regulatory Directive DIR2010-05 - Revisions to the Residue Chemistry Crop Field Trial Requirements OECD Guideline 509 Crop Field Trial (September 2009)
GLP Compliance:	No deviations from regulatory requirements were reported which would have an impact on the validity of the study.
Acceptability:	The study is considered scientifically acceptable. The acceptability of this study for regulatory purposes is addressed in the forthcoming U.S. EPA Residue Chemistry Summary Document, DP# 424008.
Evaluator:	Nancy Dodd, Chemist, RAB3/HED *Nancy Dodd*

Note: This Data Evaluation Record (DER) was originally prepared by Pest Management Regulatory Agency (PMRA). The DER has been reviewed by HED and revised to reflect current Office of Pesticide Programs (OPP) policies.

EXECUTIVE SUMMARY

Agriculture and Agri-Food Canada, Pest Management Centre, has submitted field trial data for abamectin on green onion. Five field trials were conducted on green onions in the US and Canada during the 2009 growing season in Zones 2 (1 in MD), 3 (1 in FL), 5 (1 in ON), 5B (1 in QC) and 10 (1 in CA). Abamectin, formulated as an emulsifiable concentrate (Agri-Mek® 0.15 EC), was applied to green onions as four foliar broadcast applications at rates of 20.7 – 23.2 g ai/ha (0.018 - 0.021 lb ai/A) at each trial site, for total rates of 88.5 – 91.5 g ai/ha/season (0.079 – 0.082 lb ai/A/season). A non-ionic surfactant was included in the spray mixture for all applications. The re-treatment interval (RTI) was 6-14 days, and mature green onion samples were harvested at 6-8 day PHIs at all trial sites. Additional samples were harvested at one trial site at PHIs of 0, 3, and 11 days to determine residue decline behavior. There was one treated plot and one untreated control plot at each trial site.

Green onion samples were analyzed for residues of abamectin (*i.e.*, avermectin B_{1a}/8,9-Z avermectin B_{1a} and avermectin B_{1b}) using analytical Method M-073 ("HPLC-Fluorescence Method for the Quantitation of Avermectin B_1 and 8-9Z Avermectin B_1 in/on Fruits and

Vegetables"), without modification. The lowest level of method validation (LLMV) was 0.002 ppm for each analyte; therefore, the limit of quantitation (LOQ) will be set at 0.002 ppm for each analyte. The method was validated prior to sample analysis by spiking control green onion samples with 0.002, 0.020, and 0.100 ppm avermectin B_{1a} and 8,9-*Z* avermectin B_{1a}, and 0.002 and 0.010 ppm avermectin B_{1b}. There were two method validation recoveries that were low due to sample spillage which were not included in statistical calculations. The remaining method validation recoveries were all within the acceptable 70-120% range. Accuracy of the method was confirmed by spiking control samples with 0.002-0.100 ppm avermectin B_{1a}, avermectin B_{1b} and 8,9-*Z* avermectin B_{1a} and determining recoveries concurrently with analysis of treated sample sets. There were also 2 low concurrent recoveries attributed to sample spillage that were not included in statistical calculations. For the remaining samples, with the exception of one low recovery (60% in sample spiked with 0.020 ppm avermectin B_{1a}), all recoveries were within the acceptable 70-120% range. Given that the majority of method validation and concurrent recoveries were within the acceptable range, Method M-073 is adequate for the determination of residues in green onions in this study.

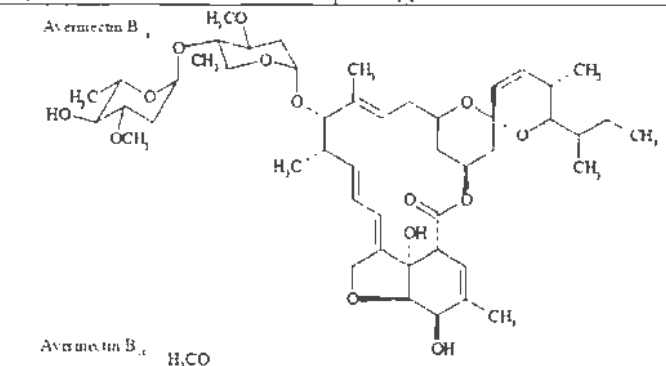
Green onion samples were stored frozen (≤ -10°C) from harvest to residue extraction for up to 274 days (~9 months). Samples were analyzed for residues within 2 days of extraction. A freezer storage stability study was not conducted concurrently with the analytical portion of the field trial study. Acceptable storage stability data are available demonstrating that residues of avermectin B_{1a}, avermectin B_{1b}, and 8,9-Z avermectin B_{1a} are stable under frozen storage for at least 24 months in five different crop types: high water (celery, pear, and tomato), high acid (orange, lemon, grapefruit, and strawberry), high protein (bean), high fat (sunflower seed), and high starch (potato) (DP# 191433, 5/19/94, G.J. Herndon; and DP# 414022, 5/15/14, N. Dodd). These data are adequate to support the storage conditions and durations of samples from the submitted field trials.

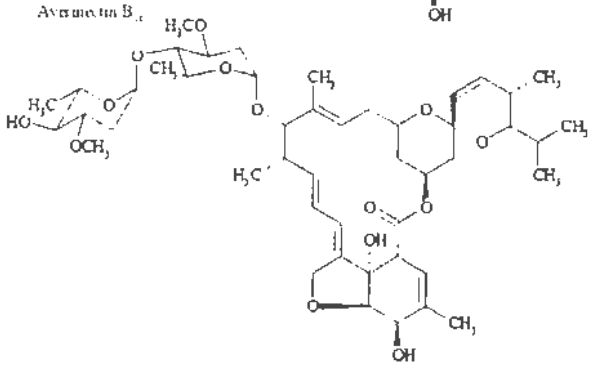
Total combined residues of avermectin B_{1a}/8,9-Z avermectin B_{1a} and avermectin B_{1b} (and per-trial averages) in green onions following a total application of 88.5 – 91.5 g ai/ha/season (0.079 – 0.082 lb ai/A/season) ranged from <0.004-<0.0048 ppm (<0.004-<0.0046 ppm) when samples were harvested at 6-8 day PHIs. Total average abamectin residues declined with increasing PHI in green onion samples harvested at 0, 3, 7, and 11 days PHI.

I. MATERIALS AND METHODS

A. MATERIALS

Table B.7.6.1.2-1. Nomenclature for Abamectin.	
Common name	Abamectin; Abamectin B_1
Identity	mixture of ≥80% (10*E*,14*E*,16*E*)-(1*R*,4*S*,5'*S*,6*S*,6'*R*,8*R*,12*S*,13*S*,20*R*,21*R*,24*S*)-6'-[(*S*)-*sec*-butyl]-21,24-dihydroxy-5',11,13,22-tetramethyl-2-oxo-(3,7,19-trioxatetracyclo[15.6.1.1^{4,8}.0^{20,24}]pentacosa-10,14,16,22-tetraene)-6-spiro-2'-(5',6'-dihydro-2'*H*-pyran)-12-yl 2,6-dideoxy-4-*O*-(2,6-dideoxy-3-*O*-methyl-α-L-*arabino*-hexopyranosyl)-3-*O*-methyl-α-L-*arabino*-hexopyranoside and ≤20% (10*E*,14*E*,16*E*)-(1*R*,4*S*,5'*S*,6*S*,6'*R*,8*R*,12*S*,13*S*,20*R*,21*R*,24*S*)-21,24-dihydroxy-6'-isopropyl-5',11,13,22-tetramethyl-2-oxo-(3,7,19-trioxatetracyclo[15.6.1.1^{4,8}.0^{20,24}]pentacosa-10,14,16,22-tetraene)-6-spiro-2'-(5',6'-dihydro-2'*H*-pyran)-12-yl 2,6-dideoxy-4-*O*-(2,6-dideoxy-3-*O*-methyl-α-L-*arabino*-hexopyranosyl)-3-*O*-methyl-α-L-*arabino*-hexopyranoside
CAS no.	71751-41-2
Company experimental name	MK0936
Other synonyms (if applicable)	Not applicable





B. Study Design

1. Test Procedure

Five field trials were conducted on green onion during the 2009 growing season reflecting four

foliar directed applications with a 0.15 lb ai/gal EC formulation of abamectin at a total rate of 88.5 – 91.5 g ai/ha/season (0.079 – 0.082 lb ai/A/season). Field trial locations by NAFTA growing zone are summarized in Table B.7.6.1.2-2. All field trials were independent trials, being located in separate states/provinces.

Table B.7.6.1.2-2. Trial Numbers and Geographical Locations.[1]

Crop	No. Trials	NAFTA Growing Zone														Total
		1	2	3	4	5	5B	6	7	8	9	10	11	12	13	
Green onion	Sub.		1	1		1	1					1				5
	Req.															3

[1] OCSPP 860.1500, Table 4.

Locations and detailed use patterns for the trials are provided in Table B.7.6.1.2-3.

TABLE B.7.6.1.2-3. Study Use Pattern.

Location: City, State or Province; Year (Trial ID)	EP[1]	Application					Tank Mix/ Adjuvants
		Method/Timing	Volume, L ha (gal/A)	Rate, g ai ha (lb ai/A)	RTI[2] (days)	Total Rate, g ai/ha (lb ai/A)	
Salisbury, MD; 2009 (MD18[3])	Agri-Mek 0.15 EC	1. broadcast foliar/ third true leaves	291 (31)	22.0 (0.020)	-	88.5 (0.079)	Induce (0.25% v/v)
		2. broadcast foliar/ immature bulbs	294 (31)	22.2 (0.020)	8		
		3. broadcast foliar/ immature bulbs	294 (31)	22.2 (0.020)	6		
		4. broadcast foliar/ nearly mature	293 (31)	22.1 (0.020)	6		
Citra, FL; 2009 (FL55)	Agri-Mek 0.15 EC	1. broadcast foliar/ vegetative	377 (40)	22.5 (0.020)	-	90.5 (0.081)	Chem-Nut 80-20 (0.25% v/v)
		2. broadcast foliar/ vegetative	379 (41)	22.6 (0.020)	7		
		3. broadcast foliar/ vegetative	380 (41)	22.6 (0.020)	14		
		4. broadcast foliar/ vegetative	380 (41)	22.8 (0.020)	7		
Salinas, CA; 2009 (CA*20)	Agri-Mek 0.15 EC	1. broadcast foliar/ 3-4 true leaves	282 (30)	22.6 (0.020)	-	89.8 0.080)	R-11 Spreader Activator (0.25-0.27% v/v)
		2. broadcast foliar/ 4-5 true leaves	327 (35)	22.6 (0.020)	6		
		3. broadcast foliar/ 4-5 true leaves	391 (42)	22.2 (0.020)	8		
		4. broadcast foliar/ mature plant	561 (60)	22.4 (0.020)	7		
Harrow, ON; 2009 (ON02)	Agri-Mek 0.15 EC	1. broadcast foliar/ 3 leaves	307 (33)	22.9 (0.020)	-	91.5 0.082)	Agral 90 (0.25% v/v)
		2. broadcast foliar/3-4 leaves	309 (33)	23.1 (0.021)	6		
		3. broadcast foliar/ 3-4 leaves	303 (32)	22.7 (0.020)	8		

TABLE B.7.6.1.2-3. Study Use Pattern.							
Location: City, State or Province; Year (Trial ID)	EP[1]	Application					Tank Mix/ Adjuvants
		Method/Timing	Volume, L/ha (gal/A)	Rate, g ai/ha (lb ai/A)	RTI[2] (days)	Total Rate, g ai ha (lb ai/A)	
		4. broadcast foliar/ 3-4 leaves	305 (33)	22.8 (0.020)	7		
Ste. Clotilde, QC; 2009 (QC01)	Agri-Mek 0.15 EC	1. broadcast foliar/ 3 leaves	371 (40)	20.7 (0.018)	-	88.6 0.079)	Agral 90 (0.25% v/v)
		2. broadcast foliar/ 3-4 leaves	409 (44)	22.8 (0.020)	7		
		3. broadcast foliar 4 leaves	393 (42)	21.9 (0.020)	8		
		4. broadcast foliar/ 5-6 leaves	415 (44)	23.2 (0.021)	6		

[1]EP = End-use Product

[2] Retreatment Interval

[3] Trial MD18: The trial at this site was conducted on 2 fields. The study does not indicate if the samples that were analyzed were harvested from one or both fields.

The actual temperature recordings and rainfall averages were within normal parameters for the residue study period with the following exceptions:

- At the trial conducted in Maryland (Trial ID # A4068.09-MD18), above average rainfall was reported for April-July, and temperatures were cooler than normal through the study period.
- At the trial conducted in Quebec (Trial ID # A4068.09-QC01), cooler temperatures and wetter than average conditions were reported during the trial period resulting in slow crop development.

No phytotoxic effects were reported at any of the field trials. Irrigation (*i.e.* drip or overhead sprinkler) was used to supplement rainfall at all the trial sites except for the trial conducted in Quebec (Trial A4068.09-QC01).

Sample Handling and Preparation

Commercially mature green onions were harvested randomly first from the untreated plot, and then from the treated plot, avoiding row ends. At each trial site, a minimum of 24 plants (~1 – 2 kg) were harvested from 24 areas by hand or by tractor with lifter bar. Dead or senesced leaves were removed, roots were trimmed, and loose soil was removed by hand, with a brush or by lightly rinsing with water. The samples were placed in sample bags which were then taken directly to facility freezers, or placed in coolers with blue ice, and then transferred to facility freezers. The samples were placed in frozen storage within 2 hours of harvest. All samples were shipped frozen to the analytical laboratory in Beltsville, Maryland where they were received in frozen condition and stored in freezers at temperatures ≤ -10°C until sample preparation. Samples were prepared by chopping with dry ice in a RobotCoupe food chopper.

2. Description of Analytical Procedures

Green onion samples were analyzed for residues of abamectin (*i.e.*, avermectin B_{1a}/8,9-Z avermectin B_{1a} and avermectin B_{1b}) using analytical Method M-073 ("HPLC-Fluorescence Method for the Quantitation of Avermectin B_1 and 8,9-Z Avermectin B_1 in/on Fruits and Vegetables"), without modification. Briefly, residues of abamectin were extracted from green onions by homogenizing with acetonitrile/0.1% phosphoric acid, and partitioning three times with hexane. The extract is then cleaned-up on an aminopropyl solid phase extraction (SPE) column and the purified extract is derivatized with trifluoroacetic anhydride. Residues were then determined by high performance liquid chromatography with fluorescence detection (HPLC-FD).

NOTE: Avermectin B_{1a} and 8,9-Z-avermectin B_{1a} yield identical products after derivatization (*i.e.* these analytes form a single HPLC peak at a retention time of ~10.4 minutes). In addition, avermectin B_{1b} and 8,9-Z avermectin B_{1b} also yield identical products after derivatization (*i.e.*, these analytes form a single HPLC peak at a retention time of ~9.5 minutes). The avermectin B_{1a} standard curve was used to quantitate avermectin B_{1b} residues since the response factors for derivatized avermectin B_{1a} and avermectin B_{1b} have been shown to be equivalent.

The calculated LOQs and LODs for each abamectin analyte are as follows:

Analyte	LOD	LOQ
Avermectin B_{1a}	0.00067 ppm	0.0020 ppm
Avermectin B_{1b}	0.00065 ppm	0.0020 ppm
8,9-Z-avermectin B_{1a}	0.00081 ppm	0.0025 ppm

The LLMV for each of the above analytes was 0.002 ppm; therefore, the LOQ will be set at 0.002 ppm for each analyte.

The method was validated prior to sample analysis by spiking control green onion samples with 0.002, 0.020, and 0.100 ppm avermectin B_{1a} and 8,9-Z avermectin B_{1a}, and 0.002 and 0.010 ppm avermectin B_{1b} (Table C.1). There were two method validation recoveries that were low due to sample spillage which were not included in statistical calculations. The remaining method validation recoveries were all within the acceptable 70-120% range. Accuracy of the method was confirmed by spiking control samples with 0.002-0.100 ppm avermectin B_{1a}, avermectin B_{1b} and 8,9-Z avermectin B_{1a} and determining recoveries concurrently with analysis of treated sample sets. There were also 2 low concurrent recoveries attributed to sample spillage that were not included in statistical calculations. For the remaining samples, with the exception of one low recovery (60% in sample spiked with 0.020 ppm avermectin B_{1a}), all recoveries were within the acceptable 70-120% range. Given that the majority of method validation and concurrent recoveries were within the acceptable range, Method M-073 is adequate for the determination of residues in green onions in this study.

NOTE: Method validation/concurrent recoveries were not conducted using 8,9-Z Avermectin B_{1b}. However, the active ingredient abamectin is a mixture of at least 80% avermectin B_{1a} and

not more than 20% avermectin B_{1b}. As such, upon photodegradation of the parent to form 8,9-Z avermectin B_1, very little 8,9-Z avermectin B_{1b} would be expected on plant samples.

II. RESULTS AND DISCUSSION

Five green onion field trials were conducted in the US and Canada during the 2009 growing season in Zone 2 (1 trial in MD), Zone 3 (1 trial in FL), Zone 5 (1 trial in ON), Zone 5B (1 trial in QC) and Zone 10 (1 trial in CA). At each trial location, four foliar broadcast applications of Agri-Mek® 0.15EC (an emulsifiable concentrate formulation of abamectin) were applied to green onions at rates of 20.7 – 23.2 g ai/ha, at RTIs of 6-14 days, for total rates of 88.5 – 91.5 g ai/ha. A non-ionic surfactant (0.25-0.27%, v/v) was also included in the spray mixture for each application. Commercially mature green onions were harvested at PHIs of 6 – 8 days. Additional samples were harvested at PHIs of 0, 3, and 11 days at the trial conducted in Salinas, CA to determine residue decline behavior. Each field trial consisted of one untreated control plot and one treated plot.

Green onion samples were analyzed for residues of abamectin (*i.e.*, avermectin B_{1a}/8,9-Z avermectin B_{1a} and avermectin B_{1b}) using analytical Method M-073 ("HPLC-Fluorescence Method for the Quantitation of Avermectin B_1 and 8,9-Z Avermectin B_1 in/on Fruits and Vegetables"), without modification. The LLMV in this study was 0.002 ppm for each analyte; therefore, the LOQ will he set at 0.002 ppm for each analyte. The method was validated prior to sample analysis by spiking control green onion samples with 0.002, 0.020, and 0.100 ppm (1-50X LOQ) avermectin B_{1a} and 8,9-Z avermectin B_{1a}, and 0.002 and 0.010 ppm avermectin B_{1b} (Table C.1). There were two method validation recoveries that were low due to sample spillage which were not included in statistical calculations. The remaining method validation recoveries were all within the acceptable 70-120% range. Accuracy of the method was confirmed by spiking control samples with 0.002-0.100 ppm avermectin B_{1a}, avermectin B_{1b} and 8,9-Z avermectin B_{1a} and determining recoveries concurrently with analysis of treated sample sets. There were also 2 low concurrent recoveries attributed to sample spillage that were not included in statistical calculations. For the remaining samples, with the exception of one low recovery (60% in sample spiked with 0.020 ppm avermectin B_{1a}), all recoveries were within the acceptable 70-120% range. Given that the majority of method validation and concurrent recoveries were within the acceptable range, Method M-073 is adequate for the determination of residues in green onions in this study. Representative chromatograms were provided for standards, controls, spiked samples, and treated samples. Overall, peaks were well defined and symmetrical in all chromatograms. Detector linearity was demonstrated over a five-point range 2.36 – 47.3 ng/µL for avermectin B_{1b} ($R^2 \geq 0.992$) and a seven-point range 2.38 – 476.64 ng/µL for avermectin B_{1a} + 8,9-Z avermectin B_{1a} ($R^2 \geq 0.990$).

Green onion samples from the submitted crop field trials were stored frozen (≤ -10°C) from harvest to residue extraction for up to 274 days (~9 months). Samples were analyzed for residues within 2 days of extraction (TABLE C.2). A freezer storage stability study was not conducted concurrently with the analytical portion of the field trial study. Acceptable storage stability data are available demonstrating that residues of avermectin B_{1a}, avermectin B_{1b}, and 8,9-Z avermectin B_{1a} are stable under frozen storage for at least 24 months in five different crop types: high water (celery, pear, and tomato), high acid (orange, lemon, grapefruit, and

strawberry), high protein (bean), high fat (sunflower seed), and high starch (potato) (DP# 191433, 5/19/94, G.J. Herndon; and DP# 414022, 5/15/14, N. Dodd). These data are adequate to support the storage conditions and durations of samples from the submitted field trials.

The results from the trials show that total combined residues of avermectin B_{1a}/8,9-Z avermectin B_{1a} and avermectin B_{1b} (and per-trial averages) in green onion following a total application of 88.5 – 91.5 g ai/ha ranged from <0.004-<0.0048 ppm (<0.004-<0.0046 ppm) when samples were harvested at 6-8 day PHIs (TABLES C.3 and C.4). Total average abamectin residues declined with increasing PHI from 0.0504 ppm in samples harvested at a 0-day PHI to <0.004 ppm in samples harvested at 11 days PHI.

TABLE B.7.6.1.2-4. Summary of Method Validation and Concurrent Recoveries of Abamectin from Green Onion.

Matrix	Type of Recovery	Fortification Level (ppm)	Sample size (n)	Recoveries (%)	Mean ± std dev (%)
Avermectin B_{1a}					
Green onion	Method Validation	0.002	3	100, 91, 104	98 ± 7
		0.020	3	87, 91, 91	90 ± 2
		0.100	3	29*, 84, 86, 93	88 ± 5
	Concurrent Recovery	0.002	5	73, 81, 82, 88, 96	84 ± 9
		0.020	4	60, 80, 78, 93	78 ± 14
		0.100	3	77, 63*, 89, 87	84 ± 6
Avermectin B_{1b}					
Green onion	Method Validation	0.002	3	84, 78, 102	88 ± 13
		0.010	3	29*, 78, 79, 83	80 ± 3
	Concurrent Recovery	0.002	5	71, 81, 79, 79, 97	81 ± 10
		0.010	3	75, 60*, 84, 80	80 ± 4
8,9-Z Avermectin B_{1a}					
Green onion	Method Validation	0.002	3	114, 75, 115	101 ± 23
		0.020	3	98, 97, 95	97 ± 2
		0.100	4	100, 98, 100, 94	98 ± 3
	Concurrent Recovery	0.002	5	96, 98, 103, 94, 117	102 ± 9

*Low recoveries are due to sample spillage and are not included in the mean, standard deviation, and sample size calculations.

TABLE 7.6.1.2-5. Summary of Storage Conditions.				
Matrix	Analyte	Storage Temperature (°C)	Actual Storage Duration[1]	Interval of Demonstrated Storage Stability (months)
Green onions	Avermectin B_{1a}	≤ -10	274 days (~9 months)	Residues of avermectin B_{1a}, avermectin B_{1b}, and 8,9-Z avermectin B_{1a} are stable under frozen storage for at least 24 months in five different crop types: high water (celery, pear, and tomato), high acid (orange, lemon, grapefruit, and strawberry), high protein (bean), high fat (sunflower seed), and high starch (potato) (DP# 191433, 5/19/94, G.J. Herndon; and DP# 414022, 5/15/14, N. Dodd).
	Avermectin B_{1b}			
	8,9-Z avermectin B_{1a}			

[1] From harvest to extraction. Residues were determined within 2 days of extraction.

TABLE B.7.6.1.2-6. Residue Data from Crop Field Trials with Abamectin								
Location: City, State or Province: Year (Trial ID)	Zone	Crop/Variety	Commodity or Matrix	Total Rate, g ai/ha (lb ai/A)	PHI (days)	Residues (ppm)		
						Avermectin B_{1a} + 8,9-Z Avermectin B_{1a} [mean]	Avermectin B_{1b} [mean]	Total [mean]
Salisbury, MD; 2009 (MD18[2])	2	Green onion/ Evergreen Hardy White	Plant	88.5 (0.079)	7	<0.002 <0.002 [<0.002]	<0.002 <0.002 [<0.002]	<0.004 <0.004 [<0.004]
Citra, FL; 2009 (FL55)	3	Green onion/ Feast	Plant	90.5 (0.081)	6	<0.002 <0.002 [<0.002]	<0.002 <0.002 [<0.002]	<0.004 <0.004 [<0.004]
Harrow, ON; 2009 (ON02)	5	Green onion/ Feast	Plant	91.5 (0.082)	7	<0.002 <0.002 [<0.002]	<0.002 <0.002 [<0.002]	<0.004 <0.004 [<0.004]
Ste. Clotilde, QC; 2009 (QC01)	5B	Green Bunching onion/ Parade	Plant	88.6 (0.079)	8	0.00281 0.00230 [0.00256]	<0.002 <0.002 [<0.002]	<0.00481 <0.00430 [<0.00456]
Salinas, CA; 2009 (CA*20)	10	Green onion/ White Spear	Plant	89.8 (0.080)	0	0.0478[2] 0.0444[2] [0.0461]	0.00436[1] 0.00414[1] [0.00425]	0.0522 0.0485 [0.0504]
					3	0.00317 0.00479 [0.00398]	<0.002 <0.002 [<0.002]	<0.00517 <0.00679 [<0.00598]
					7	<0.002 0.00201 [<0.002]	<0.002 <0.002 [<0.002]	<0.004 <0.00401 [<0.004]
					11	<0.002 <0.002 [<0.002]	<0.002 <0.002 [<0.002]	<0.004 <0.004 [<0.004]

[1] Average of replicate analyses.

TABLE B.7.6.1.2-5. Summary of Residue Data from Crop Field Trials with Abamectin										
Commodity	Total Applic. Rate (g ai/ha)	PHI (days)	n[1]	Residue Levels[2] (ppm)						
				Min.[3]	Max.[3]	LAFT[4]	HAFT[4]	Median[4] (STMdR)	Mean[4] (STMR)	Std. Dev[4]
Green onion	88.5 – 91.5	6-8	5[2]	<0.004	<0.0048	<0.004	<0.0046	<0.004	< 0.004	0.00025

[1] n = number of trials.
[2] Combined residues of avermectin B_{1a}/8,9-Z avermectin B_{1a} and avermectin B_{1b}.
[3] Values based on total number of samples.
[4] Values based on per-trial averages. LAFT = lowest average field trial. HAFT = highest average field trial. SD = standard deviation. For computation of the LAFT, HAFT, median, mean, and standard deviation, values < LOQ are assumed to be at the LOQ (0.002 ppm for greenhouse tomatoes and lychee; 0.004 ppm for green onion, guava, lima bean, papaya, pineapple, and snap bean).

III. CONCLUSION

The supervised crop field trials for abamectin in/on green onions are considered scientifically valid. Five green onion field trials were conducted in the US and Canada during the 2009 growing season in Zone 2 (1 trial), Zone 3 (1 trial), Zone 5 (1 trial), Zone 5B (1 trial) and Zone 10 (1 trial).

Abamectin, formulated as an emulsifiable concentrate, was applied to green onions as 4 broadcast foliar applications at total rates of 88.5 – 91.5 g ai/ha/season (0.079-0.082 lb ai/A). A non-ionic surfactant was included in the spray mixture for all applications. Total combined residues of avermectin B_{1a}/8,9-Z avermectin B_{1a} and avermectin B_{1b} (and per-trial averages) in green onion ranged from <0.004-<0.0048 ppm (<0.004-<0.0046 ppm) when samples were harvested at 6-8 day PHIs. Residue decline data from one trial site showed that total residues of abamectin decreased with increasing PHI.

An acceptable method was used for residue quantitation, and adequate storage stability data are available to support sample storage durations and conditions for all analytes.

IV. REFERENCES

DP# 191433, 5/19/94, G.J. Herndon
DP# 414022, 5/15/14, N. Dodd